



Coffee Berry Borer IPM for Hawai'i Growers



COOPERATIVE EXTENSION

UNIVERSITY OF HAWAII AT MĀNOA COLLEGE OF TROPICAL AGRICULTURE AND HUMAN RESOURCES

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Abstract

Hypothenemus hampei or Coffee Berry Borer (CBB) was discovered in Kona, Hawai'i in 2010, and is spreading throughout the state's coffee-growing regions. Economic crop loss is total without mitigation. Research and a successful outreach program prove that CBB can be controlled with proper farming and cultural control techniques in an integrated pest management (IPM) program.



Processors typically reject harvests with more than 25-30% infestation. L: CBB-infested ripe coffee cherry; C: Young, immature coffee berry seed/bean damaged by CBB, containing eggs and larvae; R: CBB-damaged green bean/unroasted coffee

Introduction

CBB is a tiny scolytid beetle that infests coffee berries, damaging and eventually destroying the coffee bean within. Research and outreach via Cooperative Extension is ongoing. Growers are trained in the CBB IPM program adapted for Hawai'i. Successful implementation has resulted in reported coffee infestation rates as low as under 1%.

Activity		2012 (n=55)	2013 (n=79)	2014 (n=63)	2015 (n=54)	2016 (n=80)	Impact
Field Sanitation	Strip pick at least 90% of trees	60%	50%	75%	72%	81%	Adoption of field sanitation, the most important activity, and has increased
	Trapping	76%	65%	32%	28%	26%	
Sampling & Monitoring	30 or 12 Trees S&M	0% Introduced in 2012	17%	47%	40%	77%	Adoption of the 30 or 12 trees S&M has increased over trapping
	At least every 4 wks or according to S&M	64%	74%	85%	90%	89%	
Spraying <i>Beauveria bassiana</i>	Use 32 oz per acre	28%	38%	40%	28%	39%	Adoption of greater frequency, but lower rates of <i>B. bassiana</i> application
	CTAHR	66%	61%	72%	86%	68% website; 58% workshops	
Acquiring CBB Information	CTAHR	66%	61%	72%	86%	68% website; 58% workshops	CTAHR is an important resource for CBB info

Methods - Key Components of CBB IPM

Field Sanitation & Efficient Harvesting



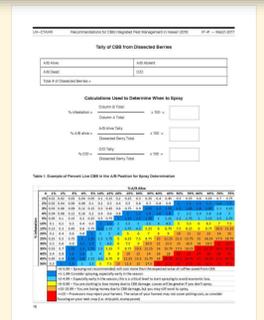
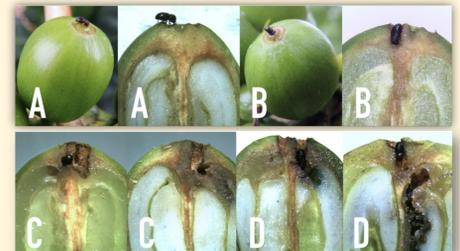
Careful harvesting minimizes dropped fruit that subsequently harbor CBB. Removing over-ripe, dried berries, and any fruit between seasons, breaks the breeding cycle of CBB. Starting the crop season with as low an infestation rate as possible is critical to managing the pest.

Block Pruning

Coffee branches (verticals) in Kona are typically pruned on a 3-year cycle, with verticals of multiple ages on a tree. Modifying the cycle to prune all the verticals at once can break the CBB cycle.



Sampling & Monitoring



Biopesticide/Chemical Use

As in many other IPM programs, scouting to time pesticide applications is important. Coffee berries need to be sampled to find the level of CBB activity, then dissected to determine the degree of damage (top left). Results determine whether the farmer should spray (bottom left). Few pesticides are cleared for coffee. An entomopathogenic fungus, *Beauveria bassiana*, is the main insecticide currently in use.

Biocontrol



Biocontrol agents could be promising, but need to be cleared for entry into the US and Hawai'i. Flat bark beetles (L), *Cathartus quadricolis* and *Leptophloeus sp.*, have moderate success in attacking CBB in dried berries remaining on the tree.

Results

CBB IPM recommendations were developed for Hawaii coffee growers and outreach was provided to disseminate the published recommendations. A website and videos supplement the document. In 2017, over 800 producers were educated on CBB IPM during workshops, field days, and meetings and more than 5,000 people were also exposed to CBB information during industry conferences, expos and other public-attended events.

Conclusion

Adoption and implementation of CBB IPM recommendations by Hawaii coffee growers is happening. For farm sustainability, producers must understand the costs and benefits of CBB management. The continuation of research is important to better understanding tools and techniques with the biggest impact. In addition, outreach also must continue to provide new and existing coffee farmers with the most current CBB IPM information.



HawaiiCoffeeEd.com
CBB IPM info



The information in this poster was developed using funds provided from agreement 58-5320-3-017 with the USDA Agricultural Research Service, managed by the University of Hawai'i at Mānoa - College of Tropical Agriculture and Human Resources, UH Mānoa, Hatch & Smith-Lever funds for Cooperative Extension from the USDA National Institute of Food and Agriculture, and the Hawai'i Department of Agriculture.



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